

REMARKS / ARGUMENTS

Claims 1-22 remain pending in this application. No claims have been canceled without prejudice or disclaimer. New claims 19-22 have been added.

Priority

Applicants appreciate the Examiner's acknowledgment of the claim for priority. Submitted herewith is a certified copy of the corresponding Japanese patent application (JP 2003-206168, filed August 6, 2003). An indication that this document has been safely received would be appreciated.

35 U.S.C. §112 and Claim Objections

The claims have been amended to overcome the Examiner's objections and rejections. The Examiner is hereby invited to contact the undersigned by telephone with any questions in order to expedite prosecution of this application.

35 U.S.C. §102

Claims 1-18 stand rejected under 35 U.S.C. §102(e) as being anticipated by Row et al (U.S. Patent No. 2002/0083111). These rejections are traversed as follows.

The present invention is directed to a storage system for increasing processing performance by reducing bottlenecks that lower response time. As

shown in Fig. 1, a storage 130 has a plurality of protocol adapters 140, NAS unit 145, cache adapters 150 and configuration managers 160 connected via an internal network 170. Protocol adapter 140 has a plurality of ports 141. Protocol adapter 140 analyzes a command received from port 141 to determine a suitable cache adapter 150 or NAS unit 145 through internal network 170. Protocol adapter can also be connected to an external storage 180 through port 141.

In order to realize a NAS system which can lighten the processing load of a NAS unit and provide a quick response to the host computer, NAS management information 223 (as shown in Figs. 2 and 16) is provided for managing the NAS units 145. NAS management information 223 includes an access mode 1604 which indicates whether or not a NAS unit 145 cooperates with a protocol adapter 140 and a cache adapter 150. If so, data can be transferred without involving the NAS unit 145 and thereby reducing the burden placed on NAS unit 145 (see specification, page 38, line 24 to page 42, line 3 and page 80, line 13 to page 84, line 20).

Claim 1 has been amended to recite the "first management information which reduces the processing load of said first controller". In addition, new dependent claims 19-22 have been added to further define the present invention over the cited art. Claim 19 specifies that the first management information includes information indicating an alternate first controller in the event of a failure of the first controller. New claim 20 recites that the alternate first controller receives information of the first controller including a list of IP addresses for designating a transmission destination by a computer. Claims 21 and 22 recite that the control memory has second management information (port management information 224) such that is one port of

the interface unit fails, an alternate port specified in this second management information inherits processing for the failed port. Independent claim 19 recites that data can be transmitted directly from the computer to the storage without passing through the controller.

Row et al disclose a parallel I/O network file server architecture having a network controller 110, file controller 112 and system memory 116 connected to an internal network 120. It is submitted that these elements do not correspond to the protocol adapter, first controller, and second controller of the presently claimed invention. According to Row et al, when a network controller receives a read request from a client work station, the resulting request is passed to file controller 112. The file controller searches the system memory 116 buffer cache for the requested data. If found, a reference to the buffer is returned to network controller 110. If not, the least recently used (LRU) cache buffer in system memory 116 is freed and reassigned for the requested block. The storage processor 114 transfers data into system memory 116, if necessary, and network control 110 transfers the data from system memory 116 to the networks without involving host 118.

Therefore, the purpose, function and structure of Row et al is completely different from the presently claimed invention as outlined above. Furthermore, it is submitted that Row et al fail to render independent claims 1 and 18, as amended, unpatentable since Row et al do not disclose any control memory having first management information as recited. In addition, Row et al certainly do not disclose the combination of the first management information with second management information (port management information) as recited in new claim 21. The

remaining dependent claims add further limitations to independent claim 1, which is asserted to be patentable and are also patentable over the cited art.


Furthermore, new claim 22 further adds the limitation regarding the second management information containing information regarding an alternate port in the event of a port failure. In item 17 on page 4 of the Office Action, the Examiner addresses in a general manner that Row et al discloses a management unit that reconfigures the destination and changes processing during failure as recited, citing paragraphs 0089-0099. However, this portion of Row et al does not disclose the presently claimed limitations regarding a control memory in a storage system having management information as recited in order to reduce processing load.

Conclusion

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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